In the Claims:

1.-39. (Cancelled)

40. (New) A method of making an attenuating and phase-shifting mask for use in semiconductor manufacturing, the method comprising:

obtaining a mask blank designed for use with light of a first wavelength, the mask blank comprising:

a transparent layer, and

an attenuating and phase-shifting layer (APS layer) formed on the transparent layer, the APS layer having an initial APS-layer thickness; and

patterning and adapting the mask blank to be an adapted-patterned mask for use with light of a second wavelength, so that a predetermined transmittance and a predetermined phase shift are provided by light of the second wavelength passing through dark areas of the adapted-patterned mask relative to light of the second wavelength passing through clear areas of the adapted-patterned mask, wherein the second wavelength is smaller than the first wavelength, the patterning and adapting comprising:

reducing the initial APS-layer thickness of the APS layer to a first APS-layer thickness at the dark areas, and

patterning and etching the APS layer to form the clear areas, wherein the APS layer remains with a second APS-layer thickness at the clear areas, the second APS-layer thickness being smaller than the first APS-layer thickness.

41. (New) The method of claim 40, wherein the second wavelength is at least 30 nm smaller than the first wavelength.

42. (New) The method of claim 40, wherein the patterning and adapting further comprises:

before the reducing of the initial APS-layer thickness of the APS layer and before the patterning and etching of the APS layer to form the clear areas, determining the first and second APS-layer thicknesses for providing the predetermined transmittance and the predetermined phase shift by using the equations

$$\Phi_t = [2(n_t-1)(D_1-D_3) / \lambda_t]180°,$$

$$T_1 = L_1/L_o = A_t \exp(-4\pi k_t D_1 / \lambda_t),$$

$$T_2 = L_2/L_o = A_t \exp(-4\pi k_t D_3 / \lambda_t),$$

$$T_t = L_1/L_2 = T_1/T_2 = \exp[-4\pi k_t (D_1-D_3) / \lambda_t],$$ where

λ_t is the second wavelength,

n_t is refractive index of the APS layer at λ_t,

k_t is extinction coefficient of the APS layer at λ_t,

A_t is a constant for the APS layer at λ_t,

D_1 is the first APS-layer thickness,

D_3 is the second APS-layer thickness,

T_1 is a first transmittance through the dark areas based on using D_1 and λ_t,

T_2 is a second transmittance through the clear areas based on using D_3 and λ_t,

Φ_t is the predetermined phase shift of light at λ_t through the dark areas relative to light at λ_t through the clear areas, based on using D_1 for the dark areas, D_3 for the clear areas, and λ_t,

T_t is the predetermined transmittance through the dark areas based on using D_1 for the dark areas, D_3 for the clear areas, and λ_t.

43. (New) The method of claim 40, wherein the reducing of the initial APS-layer thickness of the APS layer to the first APS-layer thickness is performed prior to the patterning and etching of the APS layer to form the clear areas.

44. (New) The method of claim 40, wherein the predetermined phase shift is about 180 degrees or greater.

45. (New) The method of claim 40, wherein the predetermined transmittance is between about 2% and about 20%.

46. (New) The method of claim 40, wherein the predetermined transmittance is between about 5% and about 15%.

47. (New) The method of claim 40, wherein the predetermined transmittance is about 6% or less.

48. (New) The method of claim 40, wherein the reducing of the initial APS-layer thickness of the APS layer to the first APS-layer thickness is by etching.

49. (New) The method of claim 48, wherein the reducing of the initial APS-layer thickness of the APS layer to the first APS-layer thickness is by reactive ion etching.

50. (New) The method of claim 40, wherein the etching of the APS layer to form the clear areas is by reactive ion etching.

51. (New) The method of claim 50, wherein the etching of the APS layer to form the clear areas is by reactive ion etching.

52. (New) The method of claim 40, wherein the mask blank is prefabricated and obtained from another company.

53. (New) A method of making an attenuating and phase-shifting mask for use in semiconductor manufacturing, the method comprising:

obtaining a mask blank designed for use with light of a first wavelength, wherein the mask blank is prefabricated and obtained from another company, the mask blank comprising:

a transparent layer, and

an attenuating and phase-shifting layer (APS layer) formed on the transparent layer, the APS layer having an initial APS-layer thickness; and

patterning and adapting the mask blank to be an adapted-patterned mask for use with light of a second wavelength, so that a predetermined transmittance and a predetermined phase shift are provided by light of the second wavelength passing through dark areas of the adapted-patterned mask relative to light of the second wavelength passing through clear areas of the adapted-patterned mask, wherein the second wavelength is at least 30 nm smaller than the first wavelength, the patterning and adapting comprising:

reducing the initial APS-layer thickness of the APS layer to a first APS-layer thickness at the dark areas,

patterning and etching the APS layer to form the clear areas, wherein the APS layer remains with a second APS-layer thickness at the clear areas, the second APS-layer thickness being smaller than the first APS-layer thickness, and

before the reducing of the initial APS-layer thickness of the APS layer and before the patterning and etching of the APS layer to form the clear areas, determining the first and second APS-layer thicknesses for providing the predetermined transmittance and the predetermined phase shift by using the equations

$$\Phi_t = [2(n_t-1)(D_1-D_3) / \lambda_t]180°,$$

$$T_1 = L_1/L_o = A_t \exp(-4\pi k_t D_1 / \lambda_t),$$

$$T_2 = L_2/L_o = A_t \exp(-4\pi k_t D_3 / \lambda_t),$$

$$T_t = L_1/L_2 = T_1/T_2 = \exp[-4\pi k_t (D_1 - D_3) / \lambda_t],$$ where

λ_t is the second wavelength,

n_t is refractive index of the APS layer at λ_t,

k_t is extinction coefficient of the APS layer at λ_t,

A_t is a constant for the APS layer at λ_t,

D_1 is the first APS-layer thickness,

D_3 is the second APS-layer thickness,

T_1 is a first transmittance through the dark areas based on using D_1 and λ_t,

T_2 is a second transmittance through the clear areas based on using D_3 and λ_t,

Φ_t is the predetermined phase shift of light at λ_t through the dark areas relative to light at λ_t through the clear areas, based on using D_1 for the dark areas, D_3 for the clear areas, and λ_t,

T_t is the predetermined transmittance through the dark areas based on using D_1 for the dark areas, D_3 for the clear areas, and λ_t.

54. (New) A method of making an attenuating and phase-shifting mask for use in semiconductor manufacturing, the method comprising:

obtaining a mask blank designed for use with light of a first wavelength, the mask blank comprising:

a transparent layer, the transparent layer having an initial transparent-layer thickness, and

an attenuating and phase-shifting layer (APS layer) formed on the transparent layer, the APS layer having an initial APS-layer thickness; and

patterning and adapting the mask blank to be an adapted-patterned mask for use with light of a second wavelength, so that a predetermined transmittance and a predetermined phase shift are provided by light of the second wavelength passing through dark areas of the adapted-patterned mask relative to light of the second wavelength passing through clear areas of the adapted-patterned mask, wherein the second wavelength is smaller than the first wavelength, the patterning and adapting comprising:

reducing the initial APS-layer thickness of the APS layer to a first APS-layer thickness,

patterning and etching the APS layer to form the clear areas,

recessing the transparent layer by a recess depth in the clear areas, and

before the reducing of the initial APS-layer thickness of the APS layer and before the recessing of the transparent layer, determining the first APS-layer thickness and the recess depth to provide the predetermined transmittance and the predetermined phase shift by using the equations

$$\Phi_t = [2(n_t-1)\, D_1/\lambda_t]180° + [2(n_c-1)\, D_2/\lambda_t]180°,$$

$T_t = A_t \exp(-4\pi D_1 k_t / \lambda_t)$,

$D_1 = -\lambda_t \ln[T_o/A_t] / 4\pi k_t$,

$D_2 = \lambda_t [1 - 2(n_t-1) D_1 / \lambda_t] / [2(n_c-1)]$, where

λ_t is the second wavelength,

n_t is refractive index of the APS layer at λ_t,

n_c is refractive index of the transparent layer at λ_t,

k_t is extinction coefficient of the APS layer at λ_t,

A_t is a constant for the APS layer at λ_t,

D_1 is the first APS-layer thickness,

D_2 is the recess depth,

Φ_t is the predetermined phase shift of light at λ_t through the dark areas relative to light at λ_t through the clear areas, based on using D_1 for the dark areas, D_2 for the clear areas, and λ_t, and

T_t is the predetermined transmittance through the dark areas based on using D_1 for the dark areas, D_2 for the clear areas, and λ_t.

55. (New) The method of claim 54, wherein the reducing of the initial APS-layer thickness of the APS layer to the first APS-layer thickness is performed prior to the patterning and etching of the APS layer to form the clear areas.

56. (New) The method of claim 54, wherein the mask blank is prefabricated and obtained from another company.

57. (New) The method of claim 54, wherein the predetermined phase shift is about 180 degrees or greater.

58. (New) The method of claim 54, wherein the predetermined transmittance is between about 2% and about 20%.

59. (New) The method of claim 54, wherein the predetermined transmittance is between about 5% and about 15%.

60. (New) The method of claim 54, wherein the predetermined transmittance is about 6% or less.

61. (New) The method of claim 54, wherein the second wavelength is at least 30 nm smaller than the first wavelength.

62. (New) The method of claim 54, wherein the reducing of the initial APS-layer thickness of the APS layer to the first APS-layer thickness is by etching.

63. (New) The method of claim 62, wherein the reducing of the initial APS-layer thickness of the APS layer to the first APS-layer thickness is by reactive ion etching.

64. (New) The method of claim 54, wherein the etching of the APS layer to form the clear areas is by reactive ion etching.

65. (New) The method of claim 54, wherein the recessing of the transparent layer is by reactive ion etching.

66. (New) A method of making an attenuating and phase-shifting mask for use in semiconductor manufacturing, the method comprising:

obtaining a mask blank designed for use with light of a first wavelength, wherein the mask blank is prefabricated and obtained from another company, the mask blank comprising:

a transparent layer, the transparent layer having an initial transparent-layer thickness, and

an attenuating and phase-shifting layer (APS layer) formed on the transparent layer, the APS layer having an initial APS-layer thickness; and

patterning and adapting the mask blank to be an adapted-patterned mask for use with light of a second wavelength, so that a predetermined transmittance and a predetermined phase shift are provided by light of the second wavelength passing through dark areas of the adapted-patterned mask relative to light of the second wavelength passing through clear areas of the adapted-patterned mask, wherein the second wavelength is at least 30 nm smaller than the first wavelength, the patterning and adapting comprising:

reducing the initial APS-layer thickness of the APS layer to a first APS-layer thickness,

patterning and etching the APS layer to form the clear areas, and

recessing the transparent layer by a recess depth in the clear areas.

67. (New) The method of claim 66, wherein the patterning and adapting further comprises:

before the reducing of the initial APS-layer thickness of the APS layer and before the recessing of the transparent layer, determining the first APS-layer thickness and the recess depth to provide the predetermined transmittance and the predetermined phase shift by using the equations

$\Phi_t = [2(n_t\text{-}1)\, D_1/\lambda_t]180° + [2(n_c\text{-}1)\, D_2/\lambda_t]180°$,

$T_t = A_t \exp(-4\pi\, D_1\, k_t/\, \lambda_t)$,

$D_1 = -\, \lambda_t \ln[T_o/A_t] \,/\, 4\pi k_t$,

$D_2 = \lambda_t\, [1 - 2(n_t\text{-}1)\, D_1 \,/\, \lambda_t] \,/\, [2(n_c\text{-}1)]$, where

λ_t is the second wavelength,

n_t is refractive index of the APS layer at λ_t,

n_c is refractive index of the transparent layer at λ_t,

k_t is extinction coefficient of the APS layer at λ_t,

A_t is a constant for the APS layer at λ_t,

D_1 is the first APS-layer thickness,

D_2 is the recess depth,

Φ_t is the predetermined phase shift of light at λ_t through the dark areas relative to light at λ_t through the clear areas, based on using D_1 for the dark areas, D_2 for the clear areas, and λ_t, and

T_t is the predetermined transmittance through the dark areas based on using D_1 for the dark areas, D_2 for the clear areas, and λ_t.